The Transatlantic Tests

From 1921 to 1924, radio amateurs experimented with transmitting across the Atlantic.

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Hiram Percy Maxim had editorialized that beyond the relay tests in the US, which took place during the 1910s, the next hurdle was transmitting across the Atlantic. *Everyday Engineering* magazine organized the first sending test with English amateurs prepared to listen for signals from the US. Upon the magazine's suspension of publication, the League assumed leadership of the project.

The test was scheduled for the nights of February 1, 3, and 5 of 1921. Twenty-five almost entirely east coast stations, including 1AW and 2RK, were selected to transmit designated signals at designated times on 200 meters. This test was a failure. Not one of the US stations was heard by any of the 250 or so enrolled British amateur listeners. The misfortune was attributed to any number of factors: the poor design and sensitivity of the English receiving equipment; harmonics from commercial press stations; interference from a Royal Navy station; the short period of time permitted for individual transmissions, and the fact that most of the transmitting stations were using spark.

Figure 1 — The cover of the January 1922 issue of *QST*.

The Second Transatlantic Test

Undeterred, the League began to plan for a second Transatlantic Test to include what was thought essential — the presence of an American expert, equipped with the most modern receiver available, who would be stationed at the European receiving end. The ARRL Board selected receiver circuit designer, Paul F. Godley, 2ZE, for this assignment. Godley was considered "the most expert operator in the practical reception of short wave signals."[1] The intent was for Godley to augment but not supersede the British listening effort.

During the preliminary distance trials, held in November, 27 stations qualified as finalists, and were each assigned a group of sealed letters and specific and rotating transmission times during the period of 9:30 PM to 1:00 AM EST each of the 10 consecutive days from December 7 to December 16. Non-qualifying stations were encouraged to transmit from 7:00 PM to 9:30 PM EST each evening during rotating 15-minute segments by district. The rest of the US amateurs were asked to remain silent.

Meanwhile, in a field in Ardrossan, Scotland, located southwest of Glasgow, Paul F. Godley was joined by the District Inspector for the Marconi Company, D.E. Pearson. The two attempted to keep out of the driving wind and rain by sheltering themselves — and their equipment — in a tent. This rough listening post was comprised of a (superheterodyne and regenerative) receiver, a 1300-foot Beverage antenna suspended 12 feet above ground, batteries, and auxiliary equipment. [Godley detailed this trip in his "Official Report of the Second Transatlantic Tests," which appeared in the February 1922 issue of *QST*. — *Ed.*]

When the official starting time arrived, the receiving apparatus had been fine-tuned and an identifiable spark signal from 1AAW was distinctly heard, but only briefly and not in test format. This, the first signal to traverse the Atlantic (albeit unofficially) was determined to be that of a pirate in the Boston area. The duo continued to listen on the subsequent mornings of December 8 and 9, to no avail. On the morning of the 10th, the CW signals of official entry 1BCG were solidly heard on 230 to 235 meters. This signal derived from the specially designed and constructed station of the Radio Club of America at Greenwich, Connecticut — the only station heard that morning. During the nights and early mornings that followed, until the end of the test, eight spark and 18 CW stations were heard.[2] Eight English amateurs heard eight stations, including 2FP first and five listeners logging 1BCG, all CW; a Dutch amateur heard 1BCG. Surprisingly, many of the stations that qualified in the preliminary tests were not heard in Europe. Conspicuously, CW won the day, landing the final blow to the demise of spark.

The next Transatlantic Test, scheduled for December 1922, was again a listening test but now with the second half of the event devoted to North American amateurs listening for British and French stations. The ARRL Operating Department was the leader of this complicated program. The Wireless Society of London and a French

[1]Editor, "The Story of the Transatlantics," *QST*, February 1922.

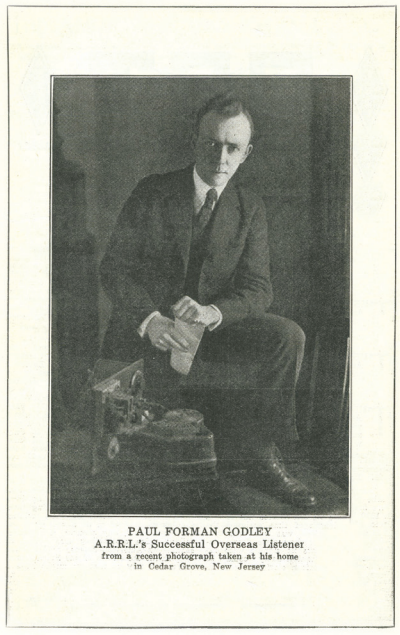

Figure 2 — Paul F. Godley, 2ZE, was sent to Scotland to aid in the second Transatlantic Test.

committee of their three leading societies along with Swiss and Dutch participation conducted activities in their respective countries. Other unique features of this test were the use of Greenwich Mean Time as the recording standard and the broadcasting of results daily by RCA long wave commercial stations on both sides.

The 20-day test was divided into two 10-day transmitting periods. The first period, December 12 to 21, was for signals from the US to Europe and the second for signals from Europe to the US. Each US morning (midnight GMT onward) was divided into the first 2½ hours for non-qualified, "free-for-all" stations rotated by district and the remaining 3½ hours for qualifiers. The 324 US and Canadian stations that qualified were assigned transmitting times and individual codes to transmit and similar procedures were set down by the Europeans.

The US and Canadian results were striking, though the European results were lackluster. 315 different North American stations from all nine districts and Canada were heard in Europe, 85 of which were heard in the British Isles as well as on the Continent. In the reverse, 20 American reporters heard only two British stations (the specially constructed 5WS in London and 2FZ in Manchester) and one French station (8AB in Nice).

[2]This included 2FP. Six of the CW stations were located in the NYC-Long Island area.

Further Tests

Two major international tests were conducted during the later part of 1923. In October, a transpacific one-way test with amateur listeners in Australia ultimately reported hearing upwards of 150 stations from the US and Canada. Stations as far east as the 3rd and 2nd districts were logged by the Melbourne receivers.

This listening test was succeeded by the fourth Transatlantic Test which ran from December 21, 1923 through January 10, 1924. This was strictly an east to west affair — initially North American stations were to listen only. The test period was divided into three one-way transmitting periods: European free-for-all, French designated individual, and English designated individual. Innovatively, the day after the listening periods, January 11, was devoted to attempts at two-way transatlantic communications. The test results evidenced that the Europeans had improved their previous test performance with 42 stations, including four in Holland, which were now received by 100 North American amateurs.

The two-way segment was encouraged by two record contacts which had been made while the event was being planned. The first two-way transatlantic contact was accomplished by Connecticut's 1MO and 1XAM and France's 8AB on November 17, 1923. This contact was followed shortly on December 8, with Connecticut's 1MO contacting British station G2KF. It is significant to note that these contacts took place on 108 to 118 meters after attempts on 200 meters had failed.

The balance of the '20s saw the Pan-American tests, the Franco-British tests, the Italian tests, the Australia-US tests, and the Commonwealth tests, as well as replays of previous tests. Continually improving technology brought reliable and consistent relays domestically. As amateurs began to recognize the potential of the shorter wavelengths and the understanding of propagation advanced, new records were established and international communication became increasingly frequent. Simultaneously, the interest in listening tests gave way to two-way transmitting tests which became more specific as to intent, region, mode, and wavelength — and consequently became more competitive. The designation "test" evolved to "contest." Contest inaugurations include Field Day in 1934, the International test in 1927, Sweepstakes in 1930, and the ARRL DX contest in 1932. Challenging tests spurred technological advances and were a cornerstone in the foundation of Amateur Radio and its enjoyment.

In the decade to come, Amateur Radio would continue to extend its limits — eventually aiding explorers in polar expeditions. An article about amateur involvement in polar expeditions is forthcoming in QST.

Good Tidings

One relay was not announced in *QST*, because it was to be kept secret. Instead it was announced by mail to members of the ARRL field organization and on the air by the appointed, official broadcasting stations. During the weekend between August 31 and September 2, W1MK, the official ARRL station in Hartford, was on the air continuously on 80 and 40 meters, receiving messages addressed to ARRL President Hiram Percy Maxim. These wishes extended congratulations and good wishes on the occasion of his 60th birthday. The recipient was "bowled over" by the more than 700 messages received from individuals, clubs, and associations throughout United States, as well as 10 other countries. And so, the 1920s concluded with a relay that captured the spirit and sentiment of the times.

Michael W. Marinaro, WN1M, an ARRL member, was first licensed in 1952 as KN2CRH and has been licensed continuously ever since. He now holds an Amateur Extra class license.

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